

REMARKS/ARGUMENTS

The wording added to claim 1 in the above amendment finds support in the specification as filed at page 11, paragraph [0029]. No new matter is presented.

Claim Rejections - 35 USC § 103

The added wording states Applicants' actual experimental results and is consistent with the explanations that Applicants' attorney expressed in the remarks accompanying the Request for Reconsideration filed September 20, 2004. Although Eckblad et al. and Applicants use similar terms, i.e., "heat spreader" in Eckblad et al. and "heat-spreading" in the present application, the effect that Eckblad et al. seek to achieve is one in which the heat conduction between a heat source and a heat sink is *promoted* (note the stated goal which is "to provide more effective heat transfer" as stated in the abstract), whereas the effect that Applicants achieve is that of a *thermal barrier*. These opposing effects result from different orientations of the carbon nanotubes. The configuration of "aligned" carbon nanotubes that Eckblad et al. explicitly teach and achieve by injection molding is not present in Applicants' invention, since Applicants' claim limitation that the composite has been "uniaxially compressed in a direction transverse to said heat sink surface" will not produce the carbon nanotube alignment taught by Eckblad et al., and in fact produces *less effective* heat transfer to the heat sink rather than more. Note that Eckblad et al. explicitly state that "when the heat spreaders are formed by injection molding, the injection molding would naturally cause the nanotubes, e.g., the fibers of the nanotubes to align" (column 4, lines 5-7) and "injection molding causes the flakes [i.e., referring to the carbon nanotubes] to align, e.g., in the direction that the matrix material is injected" (column 4, lines 38-40). This alignment does not occur with uniaxial compression, and the effect that does occur is shown by Applicants' examples, where the thermal diffusivity of the uniaxially compressed matrix in the direction transverse to the heat sink surface is *lower* than ("significantly decreased" as stated in paragraph [0029], line 9, and "approximately one fourth of") the thermal diffusivity in the same direction of the same ceramic matrix without the carbon nanotubes. To summarize, therefore, Eckblad et al. do not supply the disclosure missing from Chang et al., and in view of

the opposite results demonstrated, Applicants' invention is not only distinct from the disclosures of these references but nonobvious over the references, taken either alone or in combination. Accordingly, reconsideration of the rejection is once again requested.

Drawings

Once again, the two figures appended to the specification are presentations of experimental data; they are not drawings of the invention. The examiner is advised to consult with the examiner's supervisor on the general acceptance of experimental data in the form of figures in a patent application and the accepted fact that merely presenting experimental data does not result in any requirement that drawings of the invention itself be included. Chang et al., the first of the two references cited in the present Office Action, is an example of a patent whose figures are experimental data only and not drawings of the invention. Chang et al. present three figures, the first two of which are plots and the third is a photomicrograph. None of these show a ceramic "article" (as recited in claim 11), a "wear surface" (claim 19), a "bearing surface" (claim 20), a "cutting tool" (claim 21), or a "structural ceramic article" (claim 22). Once again, therefore, the objection to the drawings should be withdrawn.

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PATENT

Zhan, G., et al.

Amendment under 37 CFR 1.116 Expedited Procedure Examining Group 3743

Responding to Office Action of January 12, 2005

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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